

(c) *Alternative compliance by other than testing.* As an alternative to requirements prescribed in paragraph (b) of this section, compliance with the requirements of paragraph (a) of this section may be met by installing full-head protection (shields) or full tank-head jackets on each end of the tank car conforming to the following:

(1) The full-head protection (shields) or full tank-head jackets must be at least 1.27 cm (0.5 inch) thick, shaped to the contour of the tank head and made from steel having a tensile strength greater than 379.21 N/mm² (55,000 psi).

(2) The design and test requirements of the full-head protection (shields) or full tank-head jackets must meet the impact test requirements in Section 5.3 of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter).

(3) The workmanship must meet the requirements in Section C, Part II, Chapter 5, of the AAR Specifications for Design, Fabrication, and Construction of Freight Cars (IBR, see §171.7 of this subchapter).

[Amdt. 179–50, 60 FR 49077, Sept. 21, 1995, as amended by Amdt. 179–50, 61 FR 33255, June 26, 1996; 66 FR 45390, Aug. 28, 2001; 68 FR 75759, Dec. 31, 2003]

§ 179.18 Thermal protection systems.

(a) *Performance standard.* When the regulations in this subchapter require thermal protection on a tank car, the tank car must have sufficient thermal resistance so that there will be no release of any lading within the tank car, except release through the pressure release device, when subjected to:

- (1) A pool fire for 100 minutes; and
- (2) A torch fire for 30 minutes.

(b) *Thermal analysis.* (1) Compliance with the requirements of paragraph (a) of this section shall be verified by analyzing the fire effects on the entire surface of the tank car. The analysis must consider the fire effects on and heat flux through tank discontinuities, protective housings, underframes, metal jackets, insulation, and thermal protection. A complete record of each analysis shall be made, retained, and upon request, made available for inspection and copying by an authorized representative of the Department. The procedures outlined in “Temperatures,

Pressures, and Liquid Levels of Tank Cars Engulfed in Fires,” DOT/FRA/OR&D–84/08.11, (1984), Federal Railroad Administration, Washington, DC (available from the National Technical Information Service, Springfield, VA) shall be deemed acceptable for analyzing the fire effects on the entire surface of the tank car.

(2) When the analysis shows the thermal resistance of the tank car does not conform to paragraph (a) of this section, the thermal resistance of the tank car must be increased by using a system listed by the Department under paragraph (c) of this section or by testing a new or untried system and verifying it according to appendix B of this part.

(c) *Systems that no longer require test verification.* The Department maintains a list of thermal protection systems that comply with the requirements of appendix B of this part and that no longer require test verification. Information necessary to equip tank cars with one of these systems is available in the PHMSA Records Center, Pipeline and Hazardous Materials Safety Administration, East Building, 1200 New Jersey Avenue, SE., Washington, DC 20590–0001.

[Amdt. 179–50, 60 FR 49077, Sept. 21, 1995, as amended by Amdt. 179–50, 61 FR 33256, June 26, 1996; 66 FR 45390, Aug. 28, 2001; 70 FR 56099, Sept. 23, 2005; 72 FR 55696, Oct. 1, 2007]

§ 179.20 Service equipment; protection systems.

If an applicable tank car specification authorizes location of filling or discharge connections in the bottom shell, the connections must be designed, constructed, and protected according to paragraphs E9.00 and E10.00 of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter).

[68 FR 75759, Dec. 31, 2003]

§ 179.22 Marking.

In addition to any other marking requirement in this subchapter, the following marking requirements apply:

(a) Each tank car must be marked according to the requirements in appendix C of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter).

(b) Each tank car that requires a tank-head puncture-resistance system must have the letter “S” substituted for the letter “A” in the specification marking.

(c) Each tank car that requires a tank-head puncture-resistance system, a thermal protection system, and a metal jacket must have the letter “J” substituted for the letter “A” or “S” in the specification marking.

(d) Each tank car that requires a tank-head puncture-resistance system, a thermal protection system, and no metal jacket must have the letter “T” substituted for the letter “A” or “S” in the specification marking.

(e) Each tank car manufactured after March 16, 2009 to meet the requirements of §173.244(a)(2) or (3) or §173.314(c) or (d) shall be marked with the letter “I” following the test pressure instead of the letter “W”. (Example: DOT 105J600I).

[Amdt. 179-50, 60 FR 49077, Sept. 21, 1995, as amended by Amdt. 179-50, 61 FR 33256, June 26, 1996; 68 FR 75759, Dec. 31, 2003; 74 FR 1802, Jan. 13, 2009]

§ 179.24 Stamping.

(a)(1) After July 25, 2012, to certify compliance with federal requirements, the tank manufacturer must install two identical permanent identification plates, one located on both inboard surfaces of the body bolsters of the tank car. One identification plate must be installed on the right side (AR) of the tank car, and the other must be installed on the back end left side (BL) body bolster webs so that each plate is readily accessible for inspection. The plates must be at least $\frac{3}{32}$ inch thick and manufactured from corrosion resistant metal. When the tank jacket (flashing) covers the body bolster web and identification plates, additional identical plates must be installed on the AR and BL corners of the tank in a visible location. Tank cars built before July 25, 2012, may have the plate instead of or in addition to the stamping.

(2) Each plate must be stamped, embossed, or otherwise marked by an equally durable method in letters $\frac{3}{16}$ inch high with the following information (parenthetical abbreviations may be used, and the AAR form reference is

to the applicable provisions of the AAR Specifications for Tank Cars, December 2000 edition (IBR, see §171.7 of this subchapter)):

(i) *Tank Manufacturer (Tank MFG)*: Full name of the car builder as shown on the certificate of construction (AAR form 4-2).

(ii) *Tank Manufacturer's Serial Number (SERIAL NO)*: For the specific car.

(iii) *AAR Number (AAR NO)*: The AAR number from line 3 of AAR Form 4-2.

(iv) *Tank Specification (SPECIFICATION)*: The specification to which the tank was built from line 7 of AAR form 4-2.

(v) *Tank Shell Material/Head Material (SHELL MATL/HEAD MATL)*: ASTM or AAR specification of the material used in the construction of the tank shell and heads from lines 15 and 16 of AAR Form 4-2. For Class DOT-113W, DOT-115W, AAR-204W, and AAR-206W, the materials used in the construction of the outer tank shell and heads must be listed. Only list the alloy (e.g., 5154) for aluminum tanks and the type (e.g., 304L or 316L) for stainless steel tanks.

(vi) *Insulation Material (INSULATION MATL)*: Generic names of the first and second layer of any thermal protection/insulation material applied.

(vii) *Insulation Thickness (INSULATION THICKNESS)*: In inches.

(viii) *Underframe/Stub Sill Type (UF/SS DESIGN)*: The design from Line 32 of AAR Form 4-2.

(ix) *Date of Manufacture (DATE OF MFR)*: The month and year of tank manufacture. If the underframe has a different built date than the tank, show both dates.

(3) When a modification to the tank changes any of the information shown in paragraph (a)(2) of this section, the car owner or the tank car facility making the modification must install an additional variable identification plate on the tank in accordance with paragraph (a)(1) of this section showing the following information:

(i) *AAR Number (AAR NO)*: The AAR number from line 3 of AAR Form 4-2 for the alteration or conversion.

(ii) All items of paragraph (a)(2) of this section that were modified, followed by the month and year of modification.